APPENDIX VII

	Gas Checker	Air Checker
Temp, products of combustion at bottom of checker-work,	800	600
Products of combustion per cu meter of gas burnt, cu m . .	0.902	1.7868
Average temperature products of combustion = [(800X0 90) + (600X1 78)] -^ 2 68	6 (	>5

(No allowance is made for a heat loss in the flues, although in practice a temperature drop of 50° to 100° will occur between the bottom of the checker-work and the boiler inlet. The heat capacities given by the curves are based on the consumption of 100 molecular volumes or 2.232 cu m. of gas. These values have been reduced to those for a cubic meter of gas burnt in this computation.)

Heat capacity products of combustion of 1 cu m of gas at the bottom of the checkerwork, average £ = 665, calories.....
635

Heat capacity products of combustion of 1 cu m of gas at the boiler outlet, average 2=200, calories .....
162

Heat available for production of steam, calories 473

Assuming that one-third of this heat will be lost in flues and boiler setting, net amount of heat available will be, calories.....
316

Heat required for evaporation of 1 kg of water at 5.54 kg per sq cm absolute (78.76 Ib per sq in) = 156+500, calories.....
656

Products of combustion from 1 cu m of gas will evapo-
rate: 316-^656, kg..... 0.481

1 sq m of boiler heating surface is equivalent to the evaporation of 15 kg of water per hour; or 0.00417 kg of water per second

Area of the heating surface required to evaporate 0.481 kg of water per second will be: 0.481 -f-0.00417 sq m.
116

(This being the area of the heating surface required to absorb the heat in the products of combustion from 1 cu m of the gas burnt)

As the average amount of gas burnt per

second is 1.75 cu m, the area of the heating surface required will be:
116.00X1.75.....
203

Quantity of gas burnt per second, p. 231.